SONY

3-800-162-11 (4)

Compact Disc Deck Receiver

Operating Instructions

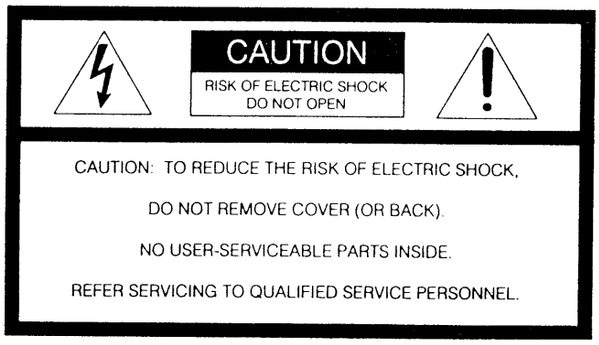
COMPACT disc DIGITAL AUDIO

HCD-451

© 1995 by Sony Corporation

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Note to CATV system installer
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Owner's Record
The model and serial number is located at the rear. Record this serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

HCD-451 Serial No._____

INFORMATION
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

— Reorient or relocate the receiving antenna.
— Increase the separation between the equipment and receiver.
— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
— Consult the dealer or an experienced radio/TV technician for help.

CAUTION
You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

CAUTION
The use of optical instruments with this product will increase eye hazard.

Precautions

This unit is a compact disc deck receiver which consists of an amplifier, tuner, stereo cassette deck and 5-compact disc player.
Before operating this unit, please check the following.

On safety

- Operate the unit only on 120 V AC, 60 Hz.
- Should any solid object or liquid fall into the unit, unplug it and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.

Caution
The use of optical instruments with this product will increase eye hazard.

On installation

- Place the unit on a level surface.
- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Good air circulation is essential to prevent internal heat buildup in the unit. Place the unit in a location with adequate air circulation. Do not place the unit on a soft surface, such as a rug that would block the ventilation holes on the bottom.
- Do not place anything on top of the cabinet. The top ventilation holes must be unobstructed for the proper operation of the unit and to prolong the life of its components.

On cleaning the cabinet

Clean the cabinet, panel and controls with a soft cloth lightly moistened with mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

On repacking

Do not throw away the carton and the packing material. It makes an ideal container to transport the unit in.

On moisture condensation

If the unit is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lens inside the CD section. Should this occur, the CD section will not operate. In this case, remove the disc and leave the unit turned on for about an hour until the moisture evaporates.

If you have any question or problem concerning your unit, please consult your nearest Sony dealer.

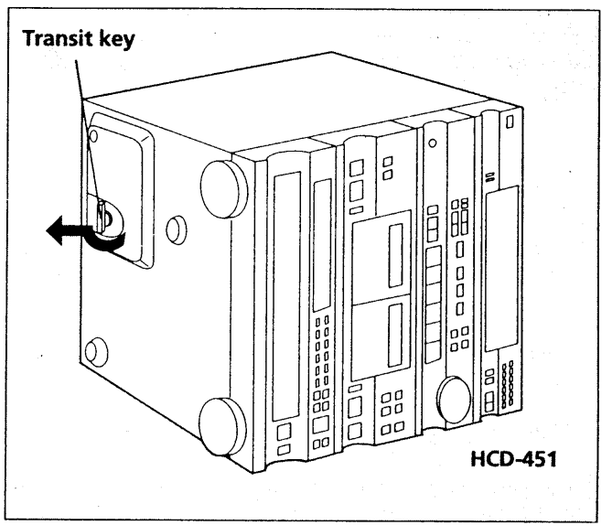
For detailed precautions, see the leaflet "IMPORTANT SAFEGUARDS".

Note on the Transit Key

The transit key on the bottom exterior of the HCD-451 protects the optical system against shock during transportation. Before operating the unit, be sure to remove the key by following the instruction on the label, and store it in a safe place.

When transporting the unit, re-install the key by following the instruction below.

1 Remove all discs from the CD section.
2 Press ⏏ to close the disc tray and wait for "1 (or 2, 3 ...)" to disappear in the display.
3 Turn the power off.
4 Insert the key into its original hole and lock it in place.



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Remote Control

The remote supplied with this unit can control the HCD-451 from a distance.

Battery life

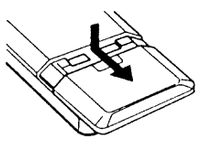
About half a year of normal operation can be expected when using the Sony SUM-3 (NS) batteries. When the batteries are exhausted, the remote can no longer operate the unit. If this happens, replace both batteries with new ones.

To avoid battery leakage

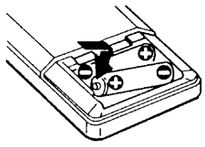
If the remote is not going to be used for a long time, remove the batteries to avoid damage caused by battery leakage and corrosion.

Inserting batteries into the remote

1 Open the cover.



2 Insert two size-AA (R6) batteries with correct polarity.

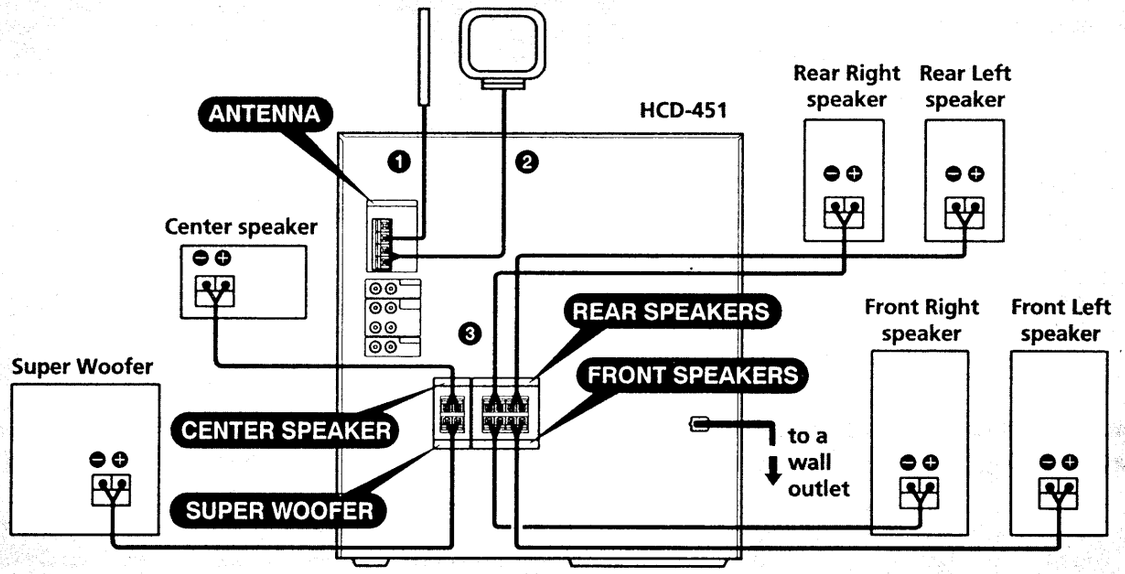


Hooking Up the System

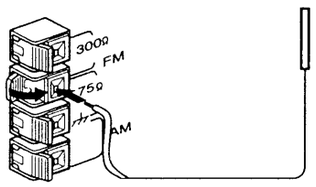
This section describes the antenna and speaker connections. It also shows how to make connections with other audio equipment.

- Connect the AC power cord last. Make sure the power is off.
- Cord plugs and jacks are color coded. Red plugs and jacks are for the right channel (R) and white ones are for the left channel (L).
- There are also red and white jacks for the FRONT, REAR, CENTER, and SUPER WOOFER.
- The cable connectors should be fully inserted into the jacks. A loose connection may cause hum and noise.
- Keep speaker cords, connecting cords and power cords away from the AM loop antenna and the tuner's antenna lead-in to avoid possible noise pickup.

The numbers correspond to the detailed illustrations following below.

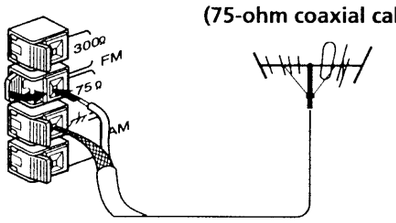


❶ FM wire antenna (supplied)



For better FM reception

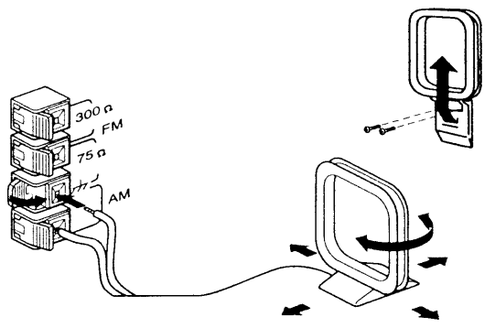
Outdoor FM antenna (75-ohm coaxial cable)



Hooking Up the System

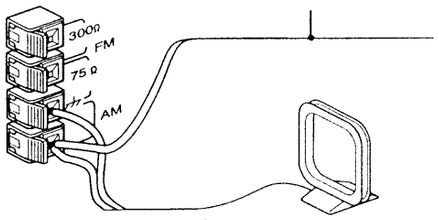
❷ AM loop antenna (supplied)

To attach to a wall



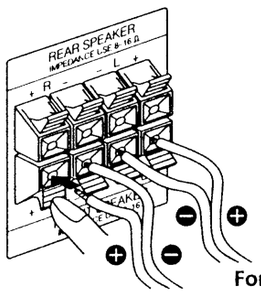
For better AM reception

Extend a 6 to 15-meter insulated wire out of door(s).



It is also necessary to connect the supplied AM loop antenna.

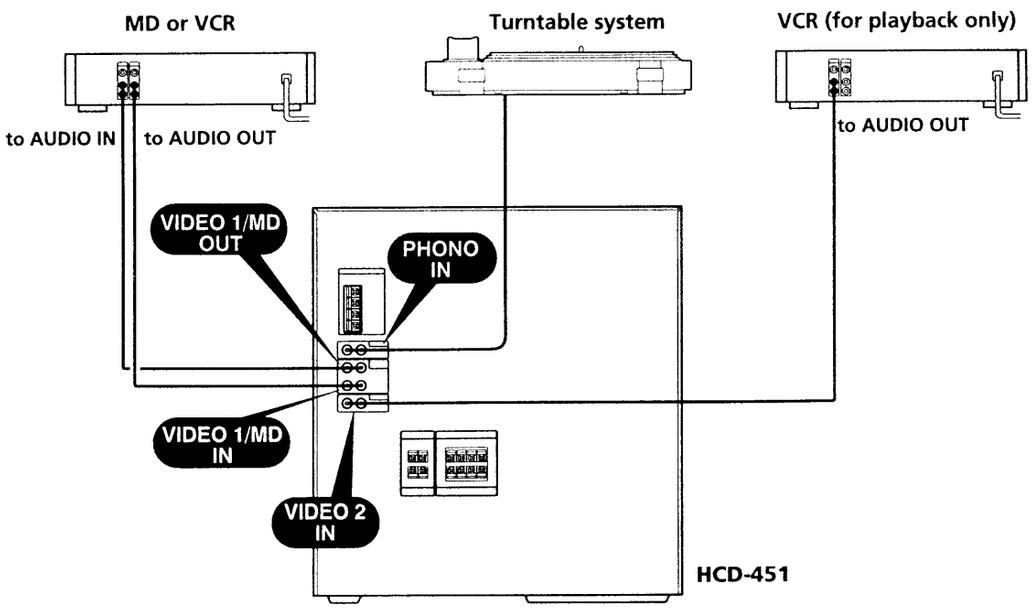
❸ Speaker cords



For left speaker

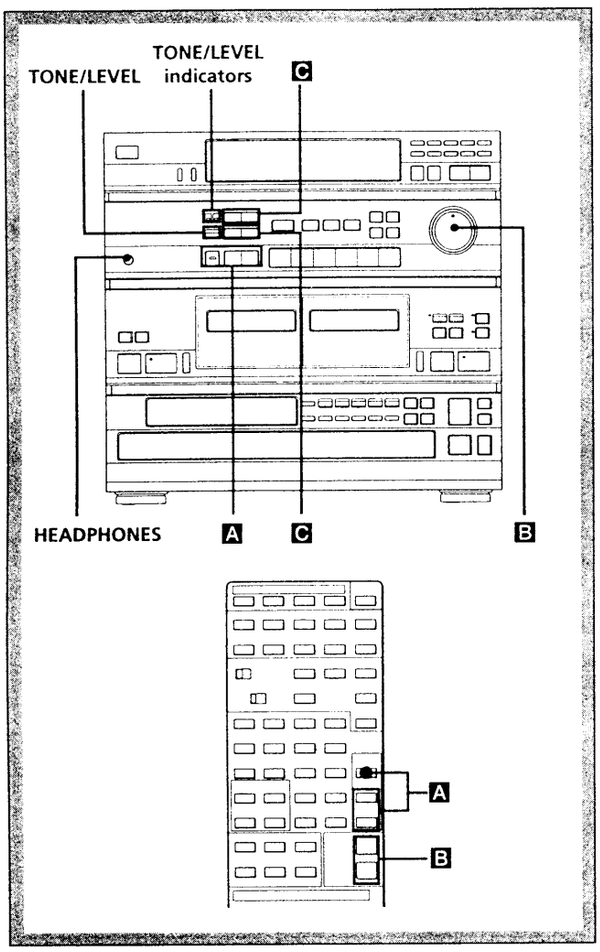
For right speaker

Adding other audio equipment to your system

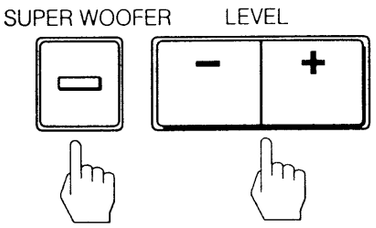


Adjusting the Audio

The following operations apply only to reproduced sound.



Adjusting the Super Woofer Level A

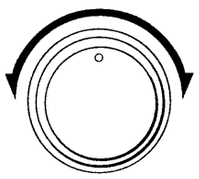


Press SUPER WOOFER so that the indicator lights.
Press LEVEL – or + to adjust the super woofer level.
The super woofer level is indicated on the display.

Notes

- The super woofer is automatically turned off in the PHONO mode and can not be controlled.
- Place the super woofer directly on the floor.
  If your floor is made of wood, to obtain high-quality bass sound, we recommend that you attach the supplied feet to the bottom corners of the super woofer for greater stability.

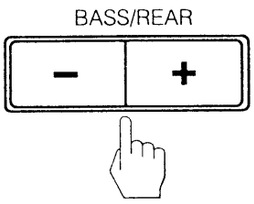
Volume Adjustment B



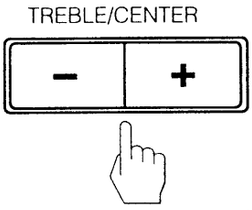
To increase the sound level, turn the VOLUME control clockwise.
To decrease it, turn the control counterclockwise.

Adjusting the Bass and the Treble Sound C

Before adjusting the tone level, press TONE/LEVEL so that the TONE indicator lights.



Press BASS/REAR + to enhance the BASS sound.
Press BASS/REAR – to attenuate the BASS sound.
The adjusted level is indicated on the display.



Press TREBLE/CENTER + to enhance the TREBLE sound.
Press TREBLE/CENTER – to attenuate the TREBLE sound.
The adjusted level is indicated on the display.

For personal listening

Connect headphones to the HEADPHONES jack. No sound is heard from the speakers.

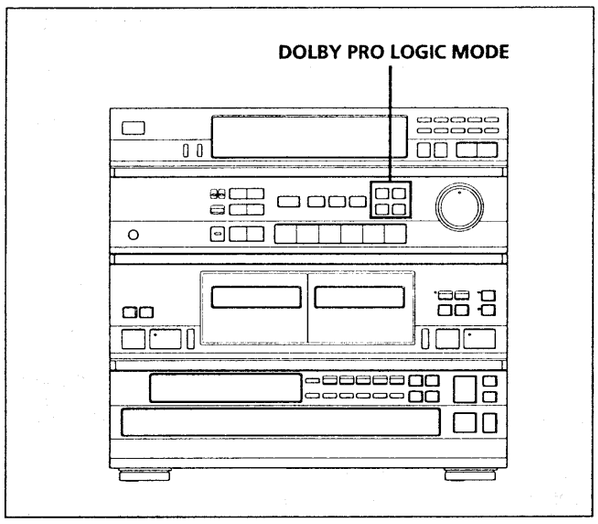
Getting Ready for Dolby Surround Sound

This section describes selecting a speaker configuration, adjusting the speaker volume, and setting the delay time of the rear speakers so you can enjoy Dolby surround sound.

Placement of Speakers and Selecting the PRO LOGIC MODE

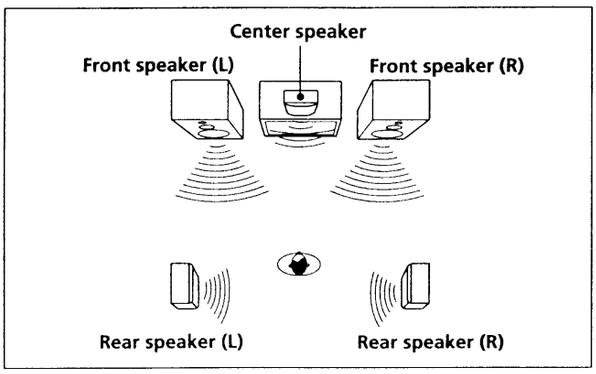
The Dolby Pro Logic Surround Decoder naturally reproduces the audio sound field and creates a theater-like experience in your listening room.

The HCD-451 incorporates a decoder which reproduces specially encoded surround sound from Dolby surround video programs.
To use Dolby surround effectively, select the speaker operation mode according to your speaker configuration by pressing DOLBY PRO LOGIC MODE: NORMAL, WIDE, PHANTOM or 3CH.
With this unit, we recommended using the NORMAL mode.



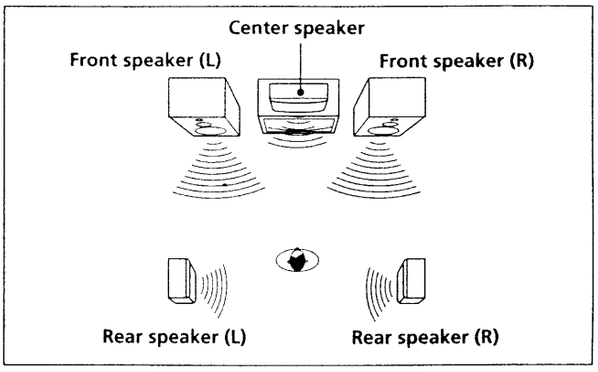
NORMAL mode

Select this mode if you use a small center speaker. The bass sound of the center channel is output from the front speakers, since a small speaker cannot produce enough bass.



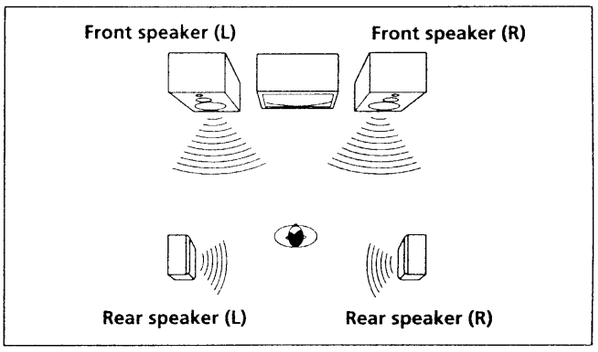
WIDE mode

Select this mode if you use a medium to big center speaker.



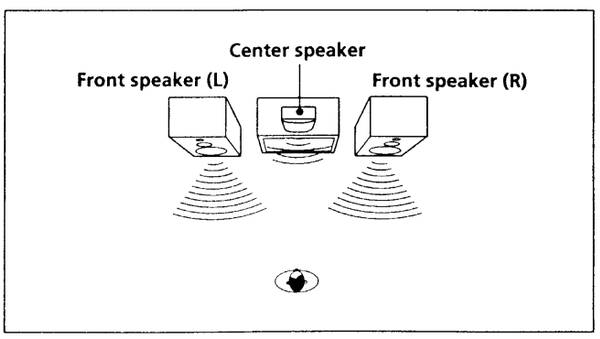
PHANTOM mode

Select this mode when you playback a Dolby surround program source without using a center speaker. The sound of the center channel is output from the front (L and R) speakers.



3CH. (Channel) LOGIC mode

Select this mode when you playback a Dolby surround program source only with the front and center speakers. The sound of the rear channel is output from the front (L and R) speakers.

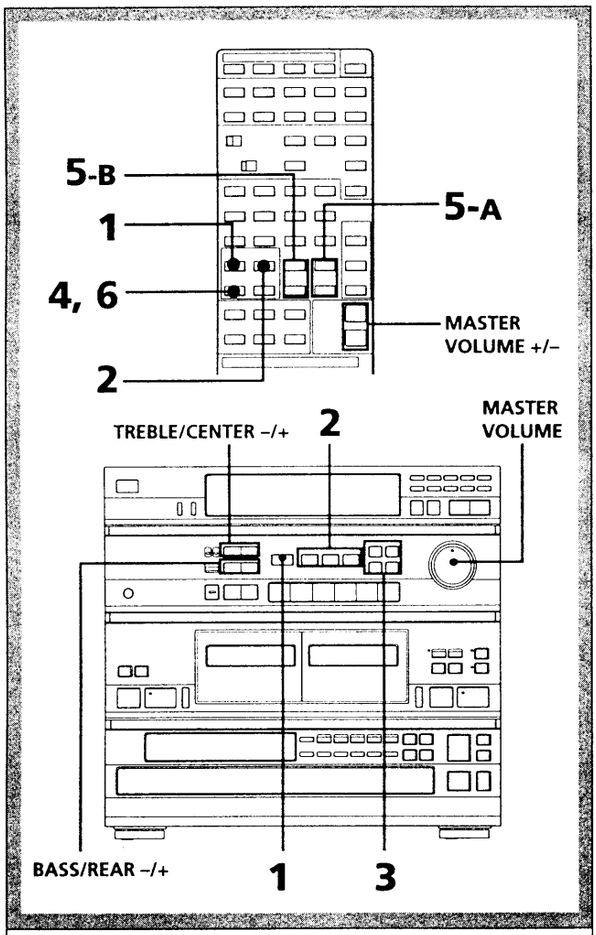


Even for video software which does not carry the DOLBY SURROUND mark

Some commercially available software may have Dolby surround processed sound tracks even though it is not indicated on the package.

Adjusting the Speaker Volume

For maximum enjoyment of surround sound when playing any program source, adjust the front, rear, and center (if connected) speakers to the same volume level. The adjustment must be done with a test tone in the DOLBY SURROUND mode, but once the level is adjusted it can be used for all surround modes.
You can adjust the volume level from your listening position by using the remote.



1 **Press SURROUND ON/OFF to ON.**
"SURROUND ON" appears in the display.

2 **Press SURROUND MODE so that "DOLBY SUR" appears on the display.**

3 **Select the Dolby pro logic mode with the DOLBY PRO LOGIC MODE buttons on the main unit according to your speaker system.**
The selected mode is displayed.

4 **Press T.TONE to set to on.**
"TEST TONE" appears on the display and the test tone will be heard from each speaker in the following order.

In NORMAL or WIDE mode:
LEFT(front) → CENTER → RIGHT(front)
↑ ← REAR(L+R) ←

In PHANTOM mode:
→ FRONT(L+R) →
← REAR(L+R) ←

In 3CH mode:
LEFT(front) → CENTER → RIGHT(front)
↑ ←

5 **Adjust the volume level so that the sound from each speaker is the same level at the listening position.**

A **To adjust the level of center speaker(s) (except for PHANTOM mode).**
Press CENTER VOL/TV VOL +/–.
The adjusted center level is indicated on the display.

B **To adjust the level of rear speakers (except for 3CH. mode).**
Press REAR VOL/TV CH +/–.
The adjusted rear level is indicated on the display.

(Turning the MASTER VOLUME control on the unit, adjusts all speakers simultaneously.)

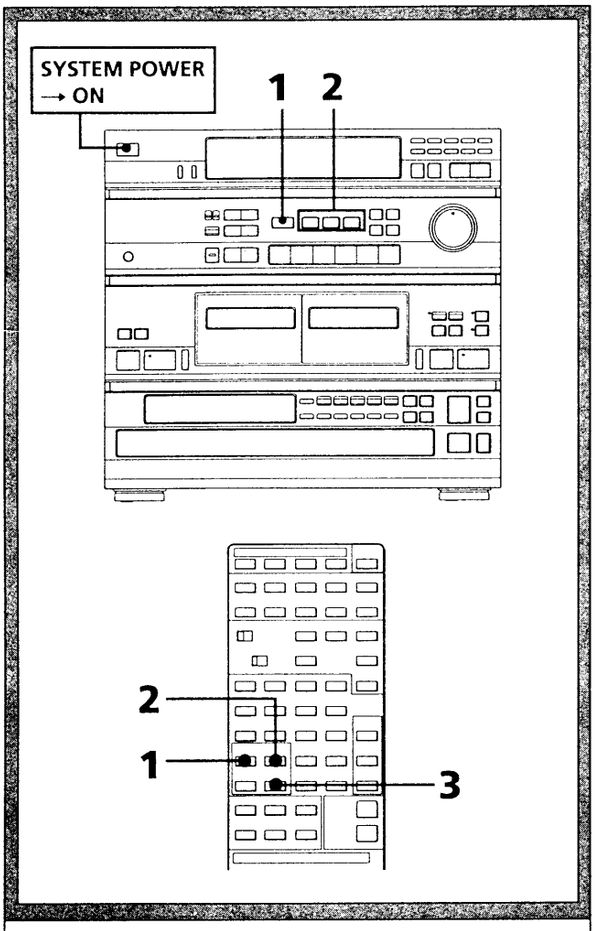
- To adjust the center level or rear level, TREBLE/CENTER –/+ or BASS/REAR –/+ on the main unit can also be used.

6 **After adjusting, press T.TONE to turn off the test tone.**
"TEST TONE" disappears.

Dolby Surround Sound

Adjusting the Delay Time of the Rear Speakers

The delay time is the time between the surround sound from the front and rear speakers. The delay time can be set for either 15 ms, 20 ms, or 30 ms.
The delay time can be set in each surround mode (DOLBY, HALL, SIMULATED). (see page 11.)



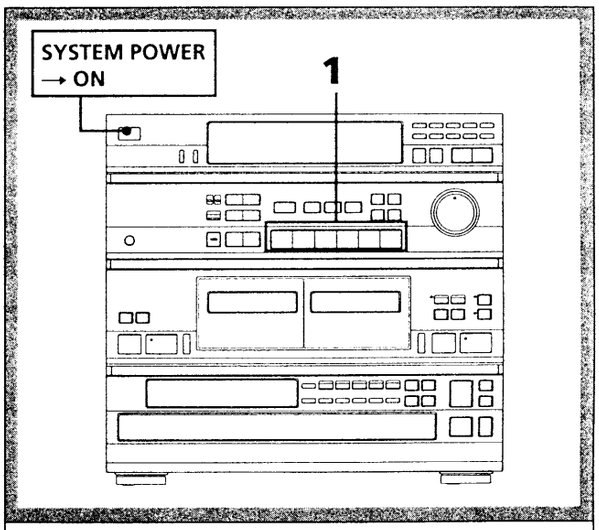
1 **Press SURROUND ON/OFF to ON.**
"SURROUND ON" appears on the display.

2 **Press the desired SURROUND MODE.**

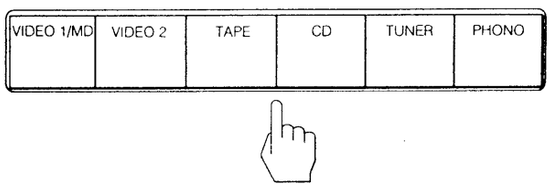
3 **Press DELAY on the remote commander to adjust the delay time.**
"DELAY TIME" and the selected delay time appear on the display.

To turn off the surround effect
Press SURROUND ON/OFF to OFF.

Source



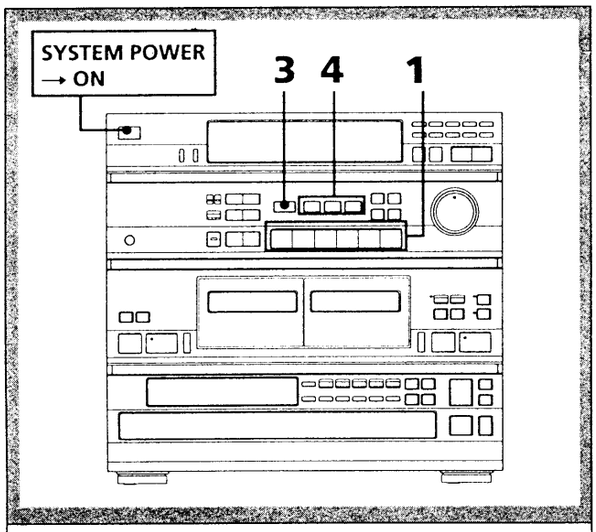
1 **Select the program source.**
The corresponding function name appears on the display. (Only VIDEO 1 appears on the display when VIDEO 1/MD is selected.)



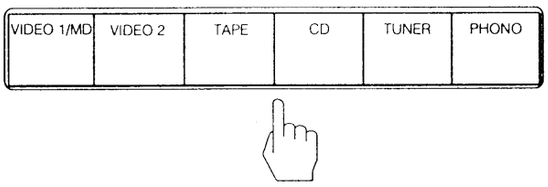
	Function selector to be pressed
Phono record	PHONO
Radio Broadcast	TUNER
Compact disc	CD
Taped program	TAPE
Video program /Mini Disc	VIDEO 1/MD or VIDEO 2

2 **Start the selected program.**

Listening with the Surround Effect



1 **Select the program source.**
The corresponding function name appears on the display.



2 **Start the selected program.**

3 **Press SURROUND ON/OFF to ON.**
"SURROUND ON" appears on the display

4 **Select the surround mode with the SURROUND MODE* buttons**
The corresponding surround mode name appears on the display.

*** You can select the appropriate surround mode from among the following modes:**

DOLBY** (Dolby Surround): Expands sound to create theater-like sound effects.

HALL (Hall surround): Provides reverberation effects similar to those produced in a concert hall.

SIMULATED (Simulated surround): Provides a simulated surround sound for non-Dolby sources.

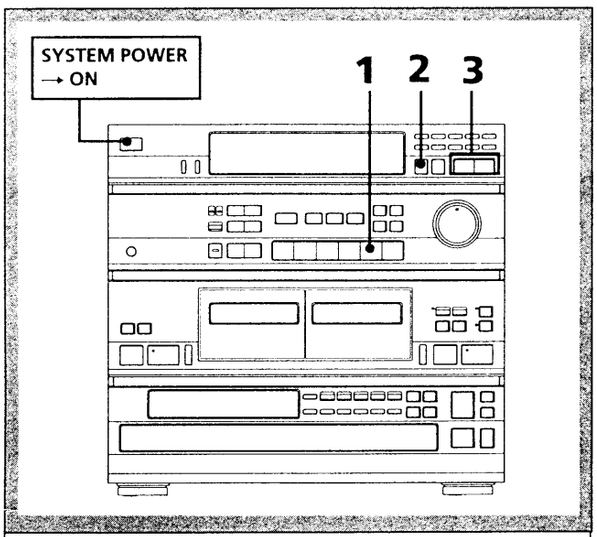
** Manufactured under license from Dolby Laboratories Licensing Corporation. Additionally licensed under Canadian patent number 1,037,877. "Dolby", the double-D symbol ⧈ and "Pro Logic" are trademarks of Dolby Laboratories Licensing Corporation.

Note

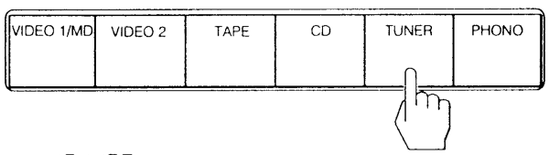
No sound will be heard from the rear speakers, unless the SURROUND ON/OFF button is set to ON.

Receiving Broadcasts

This section describes various ways to tune in AM and FM broadcasts.
Before tuning, be sure to connect the supplied AM and FM antennas.

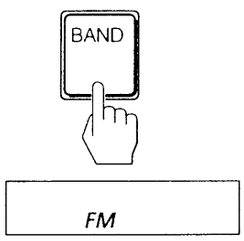


1 **Press TUNER.**



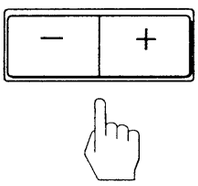
"*TUNER*" appears on the display.
(The CD section is automatically turned off in the TUNER mode.)

2 **Press BAND to select FM or AM.**



3 **Press DUAL MODE TUNING – or +.**

For a lower frequency **For a higher frequency**



- Tuning in automatically
  Keep pressing DUAL MODE TUNING – or + for about 1 second.
  When a station is received, the automatic tuning stops.

To stop automatic tuning
Press DUAL MODE TUNING – or +.

- Tuning in manually
  Press DUAL MODE TUNING – or + to select the station.

4 **Repeat step 3 until the desired station is received.**

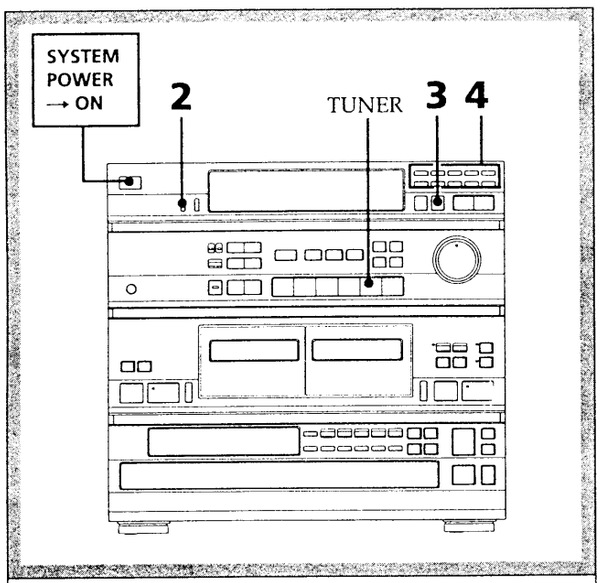
Indicators in the display
- "TUNED" appears when a station is tuned in.
- "STEREO" appears when an FM stereo program of sufficient signal strength is received.

To change the AM tuning interval
The AM tuning interval is preset at the factory to 10 kHz (for U.S.A., Canada and Mexico) or 9 kHz (for other countries) to match the frequency allocation system of your country. To change the interval, proceed as follows.
1 Press SYSTEM POWER to turn on the unit.
2 Press TUNER.
3 Set the BAND selector to AM.
4 Press SYSTEM POWER to turn the unit off.
5 While pressing DUAL MODE TUNING +, press SYSTEM POWER to turn the unit on.
To reset the interval, follow the same procedure.

Note
When the interval is changed, all stored stations, the settings for SUPER WOOFER ON/OFF, SURROUND ON/OFF, and BASS/TREBLE will be erased from the memory. After changing the interval, be sure to perform these settings again.

Storing Station Frequencies into Memory

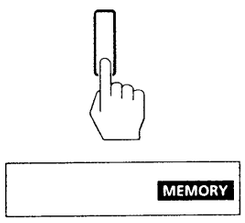
Up to 10 stations can be stored in any order for each memory page (A, B, C), so you can store up to 30 stations.



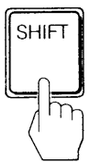
1 **Tune in the desired station. (See page 12.)**

2 **Press MEMORY.**

MEMORY

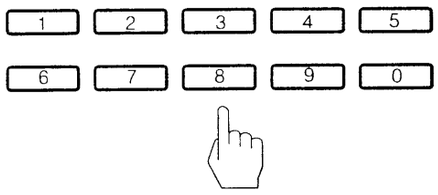


3 **While "MEMORY" is displayed, press SHIFT to select the memory page (A, B or C).**



Each time SHIFT is pressed, A, B or C is indicated cyclically.
The last memorized number on the selected page appears.

4 **While "MEMORY" is displayed, press the desired number.**



The memorized pages and numbers are displayed as: A – 1, B – 1, C – 1.

You can store a station only while "MEMORY" appears on the display
If "MEMORY" goes off, press MEMORY again.

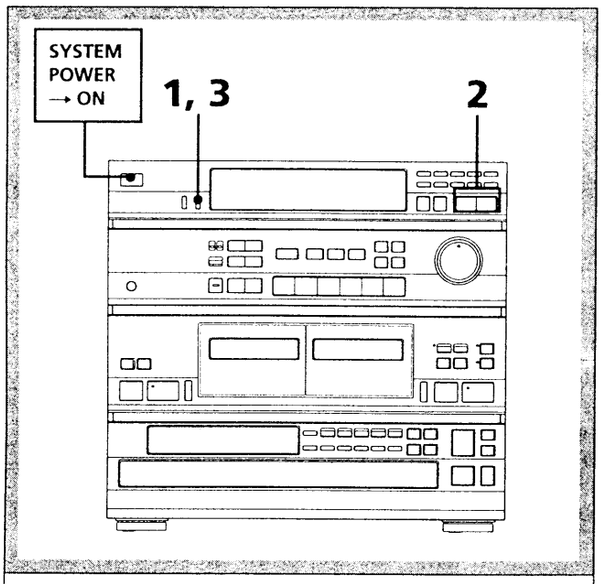
To cancel the storing operation after pressing SHIFT
Press MEMORY.

If you store a new station
Storing a new station will erase the previously stored one.

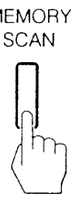
Tuning in a Stored Station

1 Press TUNER.
(The CD section is automatically turned off in the TUNER mode.)
2 Select the memory page with SHIFT.
3 Designate the number with the numeric buttons.

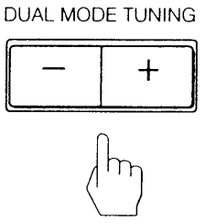
Scanning the Stored Station



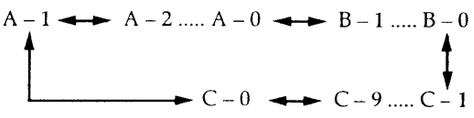
1 **Press MEMORY SCAN.**



2 **Press DUAL MODE TUNING – or +.**

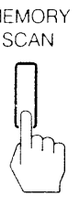


The stored stations are scanned in the following order:



Each station received will be heard for about 4 seconds.

3 **Press MEMORY SCAN again as soon as the station you desire is tuned in.**

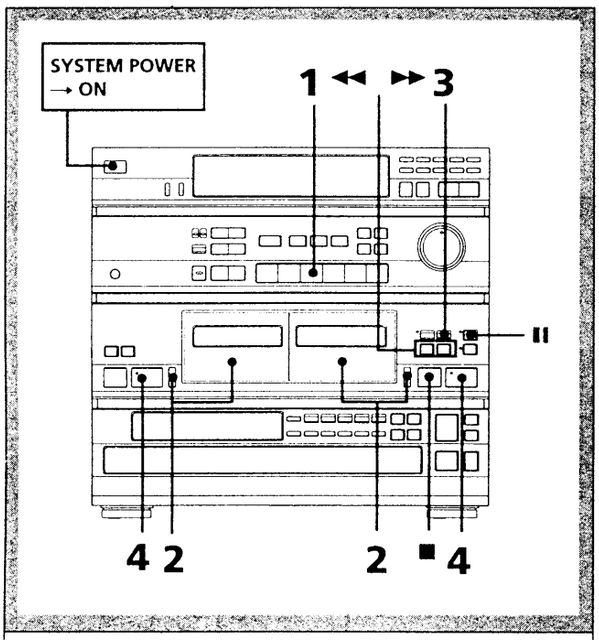


If a stored station cannot be tuned in by scanning

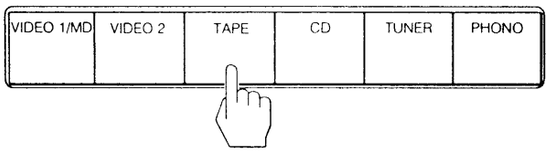
A stored station with a weak signal may be skipped. Tune in the station manually.

Playing Back Tapes (on either Deck A or B)

This section describes basic playback from either deck A or B.

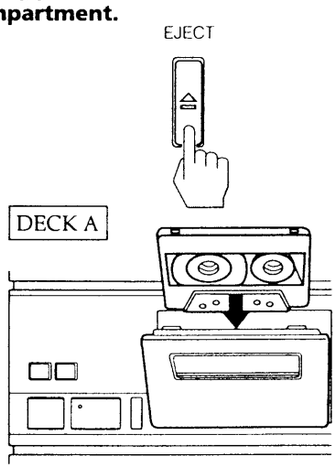


1 **Press TAPE.**

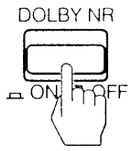


"TAPE" appears on the display.

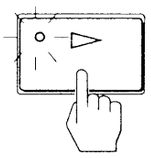
2 **Press ⏏ to open the cassette compartment, insert the tape with the side to be played facing you and close the cassette compartment.**



3 **Press DOLBY NR to select the DOLBY NR setting.**



4 **Press ▷ to start playback.**



When the tape ends, playback stops automatically.

To stop playback, rewinding or fast forwarding, press ■.
To pause, press II.
To resume playback, press II again or ▷.
To rewind the tape, press ◀◀.
To fast-forward the tape, press ▶▶.

Notes

- During playback or recording on one deck, do not operate the other deck. (When both decks A and B are in playback mode, only playback from deck A will be audible.)
- Before turning the power off, be sure to stop playback or recording by pressing ■.

What is the Dolby NR* system?

Dolby NR (noise reduction) system reduces tape hiss noise in low-level, high-frequency signals. The system boosts these signals in recording and lowers them in playback.
When listening to a tape recorded with Dolby NR, set DOLBY NR to ON.

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol DD are trademarks of Dolby Laboratories Licensing Corporation.

Specifications

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION:
With 8-ohm loads, both channels driven, from 70 -20,000 Hz; rated 100 watts per channel minimum RMS power, with less than 0.9% total harmonic distortion from 250 milliwatts to rated output.

Amplifier

Overall output: 120 W + 120 W (front, at rear/center/woofer off at 1 kHz, 8 ohms)
15 W + 15 W (rear, at center/woofer off at 1 kHz, 8 ohms)
30 W (center, at rear/woofer off at 1 kHz, 6 ohms)
30 W (woofer, at rear/center off at 40 Hz, 4 ohms)

Harmonic distortion: Less than 0.9% (at 1 kHz, 8 ohms loads, front: 120 W + 120 W, rear/center/woofer off)

Frequency response: PHONO: RIAA curve
VIDEO 1/MD, VIDEO 2: 40 Hz – 50 kHz, ±3 dB

Input

	Sensitivity	Impedance
PHONO	2.5 mV	50 kilohms
VIDEO 1/MD VIDEO 2	250 mV	50 kilohms

Output
VIDEO 1/MD: Voltage 250 mV, impedance 1 kilohm
FRONT SPEAKERS: Accept speakers of 8 – 16 ohms
REAR SPEAKERS: Accept speakers of 8 – 16 ohms
CENTER SPEAKERS: Accept speaker of 6 – 16 ohms
SUPER WOOFER SPEAKERS: Accept speaker of 4 – 16 ohms
HEADPHONES: Accept low and high impedance

Tone buttons: BASS: Boost/cut range ±7 dB (100 Hz)
TREBLE: Boost/cut range ±7 dB (10 kHz)

Tuner

System: FM stereo, FM/AM superheterodyne tuner
Quartz-locked PLL digital synthesizer system

FM tuner section

Tuning range: 87.5 – 108 MHz
Antenna terminals: 75 ohms unbalanced
300 ohms balanced
Intermediate frequency: 10.7 MHz
Sensitivity (at 50 dB quieting)
22.1 dBf, 7 µV (mono)
42.1 dBf, 70 µV (stereo)
Usable sensitivity: 19.5 dBf, 5 µV (IHF)

Signal-to-noise ratio (at 75 kHz deviation)
80 dB (mono)
75 dB (stereo)
Separation: 35 dB at 1 kHz
Selectivity: 55 dB at 400 kHz
Harmonic distortion: 0.3% (mono) at 1 kHz
0.5% (stereo) at 1 kHz

AM tuner section

Tuning range: 530 – 1,710 kHz (10 kHz)
531 – 1,710 kHz (9 kHz)
Antenna: AM loop antenna, External antenna terminals
Intermediate frequency: 450 kHz
Usable sensitivity: AM loop antenna: 500 µV/m (1,000 kHz)
Signal-to-noise ratio: 54 dB
Harmonic distortion: 0.5%
Selectivity: 38 dB (10 kHz)

Tape Deck

System: 4-track 2-channel stereo
Frequency response (DOLBY NR OFF)
With TYPE II cassette (Sony UCX-S): 30 – 14,000 Hz (±3 dB)
With TYPE I cassette (Sony HF-S): 30 – 13,000 Hz (±3 dB)
Wow and flutter: 0.12% WRMS (NAB)

Compact Disc

System: Compact disc digital audio system
Laser: Semiconductor laser
Wavelength: 780-790 nm
Frequency response: 2 Hz – 20 kHz (±1.5 dB)
Harmonic distortion: Less than 0.03 % (1 kHz)

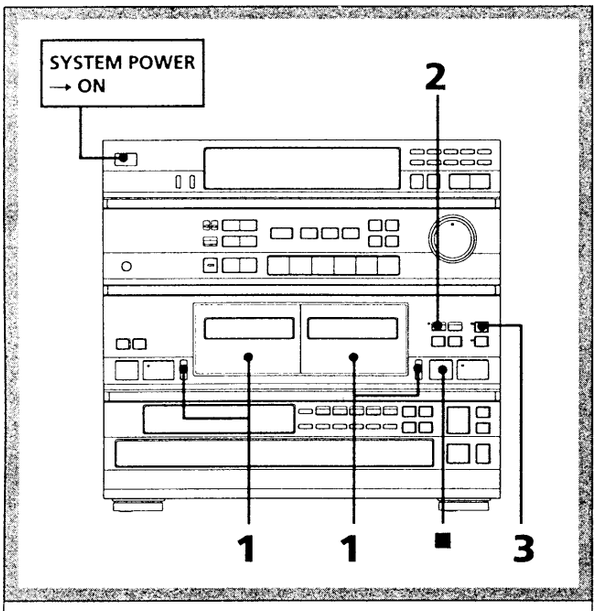
General

Power requirement: 120 V AC, 60 Hz
Power consumption: 240 W
Dimensions: Approx. 430 x 410 x 400 mm (w/h/d) (17 x $16^3/_{16}$ x $15^3/_4$ inches) (including projecting parts and controls)
Mass: Approx. 15.2 kg (33 lb 9 oz) net
Accessories supplied
AM loop antenna (1)
FM wire antenna (1)
Remote Commander RM-U451 (1)
Sony batteries SUM-3(NS) (2)

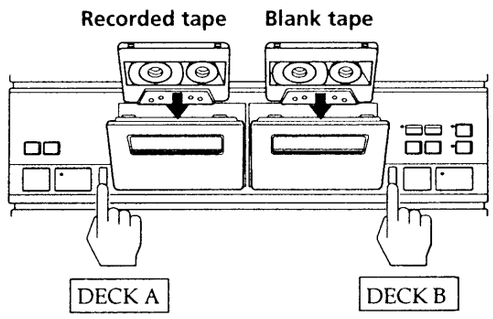
Design and specifications are subject to change without notice.

Dubbing Tapes (from Deck A to B)

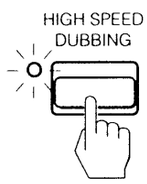
This section describes recording from deck A to B.



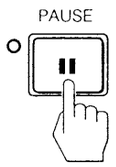
1 **Press ⏏ to open the cassette compartments, insert the tapes with the sides to be played or recorded facing you and close the cassette compartments.**



2 **Press HIGH SPEED DUBBING.**
The unit enters recording pause mode for high speed dubbing, the ❚❚ and ● indicators light.
(Dubbing can not be carried out by pressing the HIGH SPEED DUBBING button.)



3 **Press ❚❚ to start dubbing.**
The recording pause mode will be canceled and dubbing starts.
The ❚❚ indicator goes off.



To stop dubbing, press ■ on deck A or B.

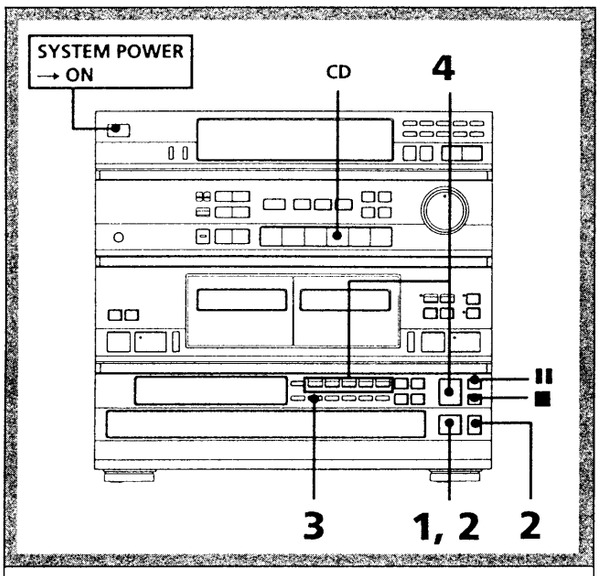
Notes

- The tape in deck B is automatically recorded with the same recording system as the original tape in deck A. So it is unnecessary to set DOLBY NR.
- If the sound is affected by a television set during dubbing, turn off the set or move it away from the unit.

Playing the Discs – Continuous Play

This section describes continuous play with the CD section. You can choose to play just one, or up to five discs.

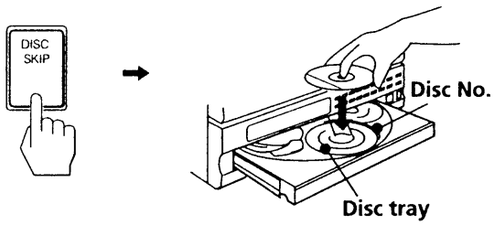
Before playing a disc, turn on the SYSTEM POWER and set the function selector to the CD mode.



1 Press ⏏ to open the disc table.

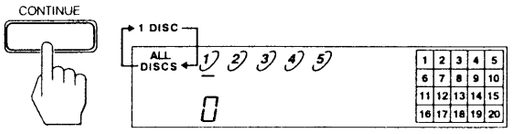
2 Place a disc with the label side up.

To play more than one disc, press DISC SKIP to turn the disc tray and place up to 5 discs.
After placing discs, press ⏏ to close the disc table.

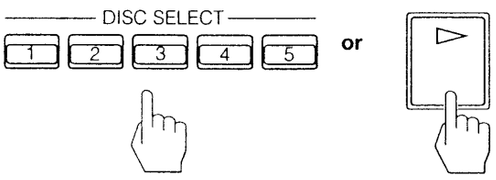


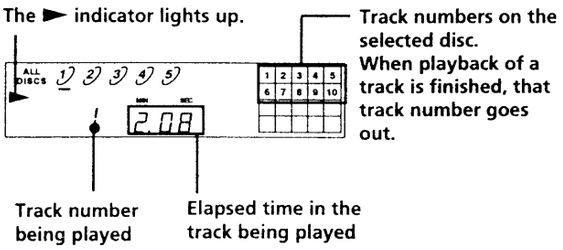
3 Press CONTINUE to choose whether to play one disc or all discs.

Each time CONTINUE is pressed, "1 DISC" or "ALL DISCS" appears alternately.



4 Press DISC SELECT or ▷ to start playback.




The ► indicator lights up.
Track numbers on the selected disc. When playback of a track is finished, that track number goes out.
Track number being played
Elapsed time in the track being played

To stop play, press ■.
To stop play and open the tray, press ⏏.

To stop for a moment during play, press ❚❚.
Press ▷ or ❚❚ to resume playback.

Caution on adjusting volume

Do not turn up the volume while listening to a portion with a very low level or no audio signals. The speakers may be damaged when a peak level portion is played.

Notes

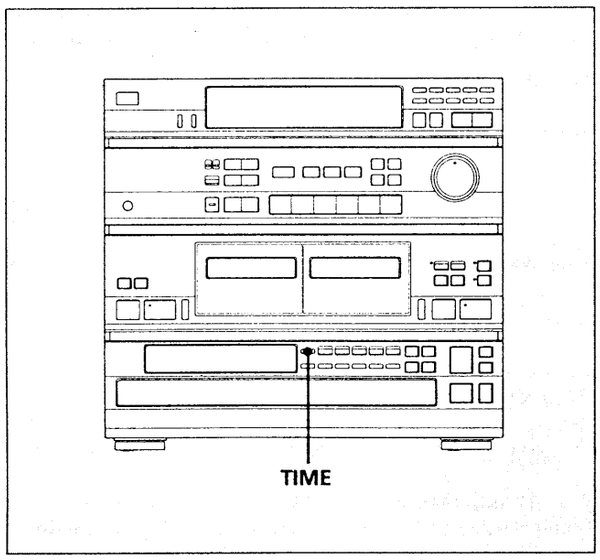
- The CD section is automatically turned off in the TUNER mode. The OPEN/CLOSE and DISC SKIP buttons, however, can be operated in any mode (including TUNER). This is useful when recording on tape from CDs.
- The disc number of an empty tray will be displayed until the empty tray is set to play. Once it is recognized as empty, it will disappear.

To play an 8 cm (3-inch) CD

If the disc is provided with an adaptor, first remove it, then place the disc on the inner circle of the tray. Do not put a normal CD (12 cm/5-inch) on top of an 8 cm CD.

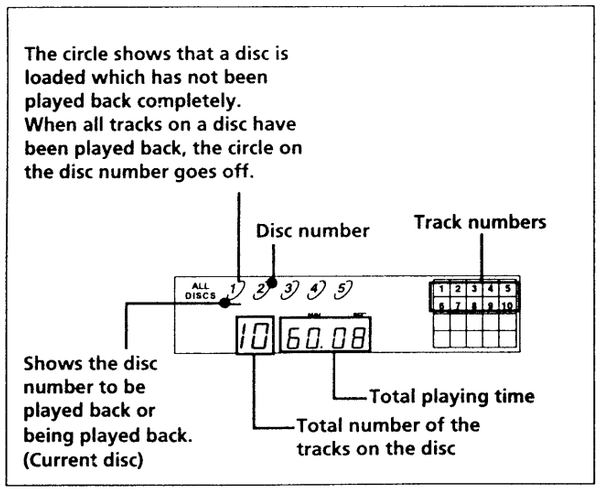
When there are no disc at all on the tray

"no d ISC" appears on the display.

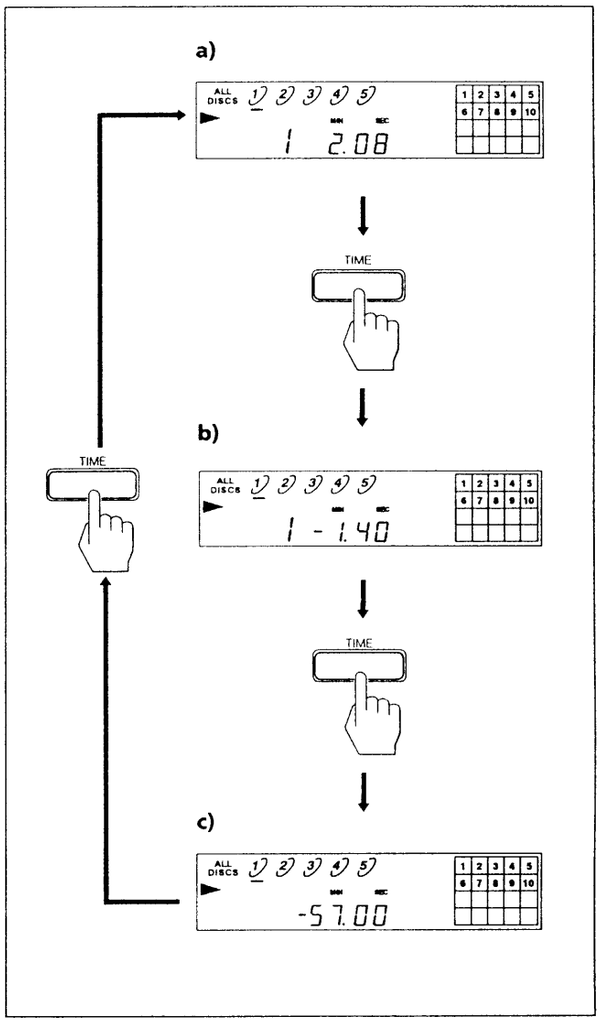


Information Display

When the disc tray is closed by pressing ⏏, the total number of selections and the total playing time of the disc to be played are displayed for a few seconds.
If you press TIME in stop mode, the total number of selections and the total playing time of the disc to be played can be displayed.


The circle shows that a disc is loaded which has not been played back completely. When all tracks on a disc have been played back, the circle on the disc number goes off.
Disc number
Track numbers
ALL DISCS
10 60.08
Shows the disc number to be played back or being played back. (Current disc)
Total playing time
Total number of the tracks on the disc

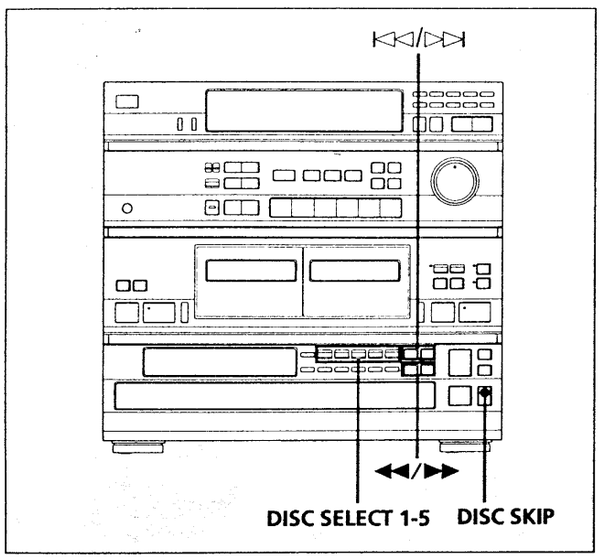
Each time you press TIME during playback, the display changes as follows:



a) Time elapsed on the track (automatically displayed when playback starts.)
b) Time remaining on the track.
"- -.- -" indicator will appear in the display instead of the actual time, if selection number 24 or higher is selected.
c) Time remaining on the disc.

Note
Time remaining on the disc is only available in the continuous mode. It connot be displayed by pressing TIME during the program or shuffle mode.

Playing the Discs – Continuous Play



Selecting a Desired Disc

By using the DISC SELECT 1 to 5 buttons or the DISC SKIP button during playback, you can locate the beginning of any disc.

To select a particular disc
Press the corresponding DISC SELECT 1 to 5.
To move to the next disc on the tray
Press DISC SKIP.

Locating a Particular Track

Locating a track in sequence
You can locate the beginning of a track on the disc being played.

To locate the beginning of the track being played
Press ⏮.
To locate the beginning of the next track
Press ⏭.

Press ⏮ or ⏭ until the desired track is located.

Locating a Particular Point in a Track

Locating a point in sequence (Manual Search)
You can locate a particular point during playback by monitoring the sound at high speed.

To go back at high speed
Keep ◀◀ pressed.
To go ahead at high speed
Keep ▶▶ pressed.

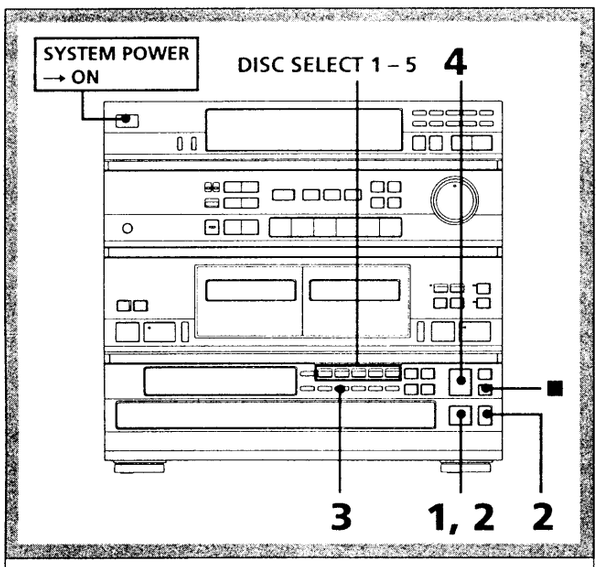
Release the button when you reach the desired point.

To locate at higher speed
Press ◀◀ or ▶▶ in the pause mode. Search speed will increase by three times, but there will be no sound. Find the desired point by watching the time number on the display.

"⅂ ⅂" appears in the display
If you continuously press ▶▶ during play at the end of the disc, "⅂ ⅂" appears in the display. Press ◀◀ or ⏮ to return to the normal display.

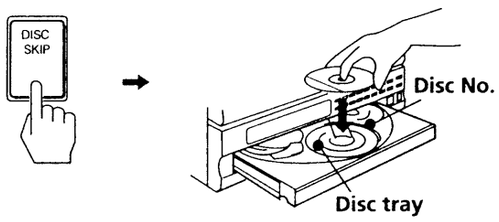
Playing in a Random Order – Shuffle Play

You can have the tracks (up to 99) played in a random order. The unit will play all the discs or just the ones you desire.

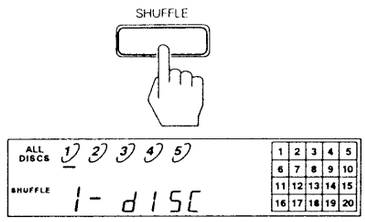


1 **Press ⏏ to open the disc table.**

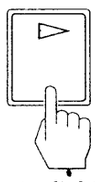
2 **Place a disc with the label side up.**
To play more than one disc, press DISC SKIP to turn the disc tray and place up to 5 discs.
After placing discs, press ⏏ to close the disc table.



3 **Press SHUFFLE to select the ALL DISCS or 1 DISC mode.**
ALL DISCS: Tracks from all discs are played in a random order.
1 DISC: Tracks from the current disc are played in a random order.



4 **Press ▷ to start playback.**



The ► indicator lights up.

Once a selection has been played, it will not be played again until the shuffle play is complete.

To stop playback
Press ■.

To cancel shuffle play
Press CONTINUE to return to the continuous mode.

To change from program or continuous play to shuffle play
Press SHUFFLE during program or continuous play. The program mode or continuous mode will be cleared and shuffle play will start from the track currently being played.

While the unit is shuffling the selection
"[ ]" appears on the display.

Shuffle Play on Specified Disc – Select Shuffle Play

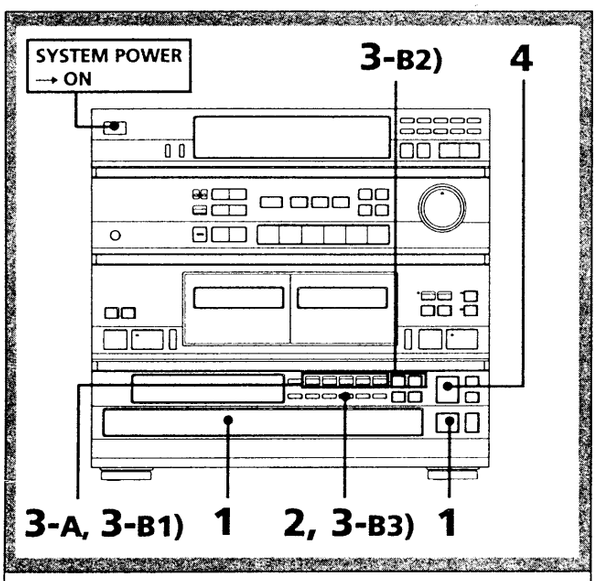
If you specify discs before or during play in ALL DISCS shuffle mode, only the tracks on the specified discs will play in a random order.

To specify the discs
Press DISC SELECT 1 to 5 to specify the discs after choosing ALL DISCS mode. Semi - circles appear around the selected discs numbers to be played. To cancel the selected discs, press DISC SELECT 1 to 5 of selected discs numbers again.
Press ▷.
Select Shuffle Play starts.

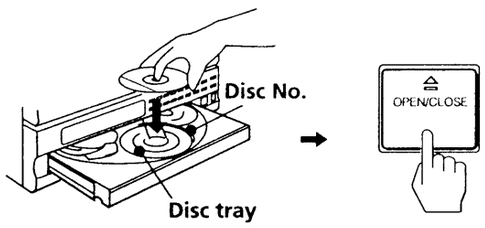
To return to all shuffle play
Press SHUFFLE twice.

Playing in a Desired Order – Program Play

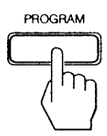
You can make a program by designating up to 32 steps in the order you want them to be played. The unit will play the disc according to your program.
This function is very convenient when recording a cassette tape.



1 **Place discs with the label side up.**
After placing discs, press ⏏ to close the disc table.

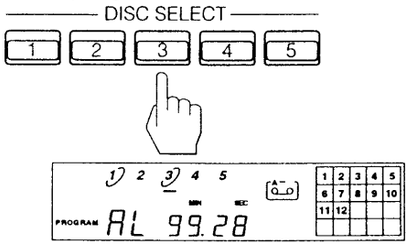


2 **Press PROGRAM so that "PROGRAM" appears on the display.**



3-A **To program discs to play in the order you want.**

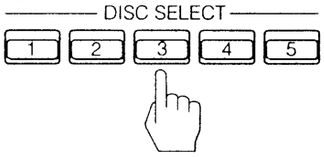
Press DISC SELECT 1 – 5 in the order you want to program.



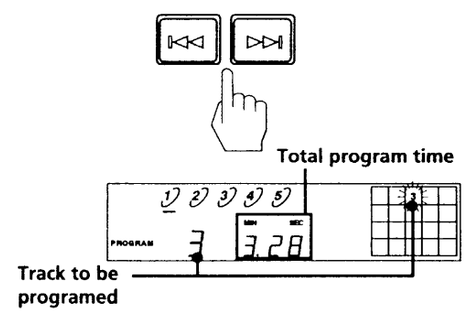
"AL" appears in the display.

3-B **To program tracks on a disc to play in the order you want.**

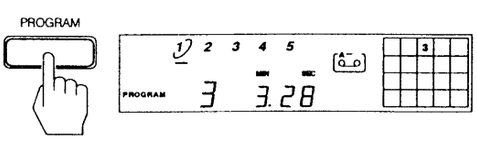
1) **Select the desired disc with DISC SELECT 1 – 5.**



2) **Press ⏮ or ⏭ repeatedly until the desired track is located.**



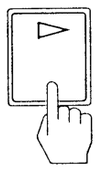
3) **Press PROGRAM.**



The track is stored, and the blinking number in the display lights up.

Repeat 2) and 3) to select another track.
To program tracks from another disc, repeat 1), 2), and 3).

4 Press ▷ to start playback.



The ► indicator lights up.

Skipping to the next track programed
Press ▷▷| during playback.

Going back to the beginning of the track being played
Press |◁◁ during playback.

To stop program play
Press ■. The last selection number programed will be displayed.
To resume playback, press ▷. Play begins from the beginning of the program.
You can play the same program repeatedly as long as you do not cancel program play or erase the program.

To program while observing the disc labels
Leave the disc table open.

To check the program contents
Press CHECK. Each time the button is pressed, the program contents are displayed in the programed order.

To cancel program play
Press CONTINUE and return to the continuous playback mode. The program will be erased.

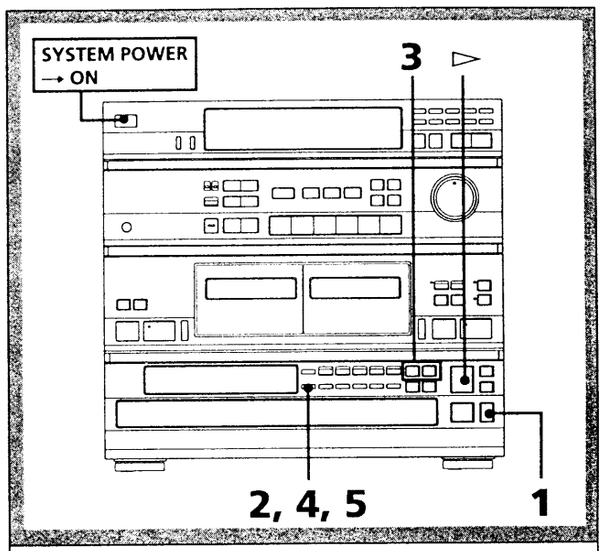
To cancel all the programed tracks
Press ■ to cancel in stop mode.
If the disc table is opened or the power is turned off, the program contents are also erased.

To program for recording
After steps 1 to 3-A or 3-B3), press ❚❚ to insert a pause and program the selections for side B by performing step 3-A to 3-B3).

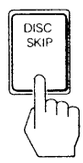
When the selections for side A have been played, the unit will pause. ("B" lights up.)
Set the tape to the beginning of side B, then press ▷ or ❚❚.
The selections for side B will start to play back.

Notes
- The playing time for track numbers higher than 20 will not be added into the total playing time.
- When tracks have been programed for sides A and B, the display shows the tracks programed for side B and the total playing time for side B in stop mode.

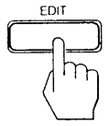
With time edit, you can easily record from CD. Just designate the length of your tape, and time edit automatically programs the tracks that will fit onto each side.



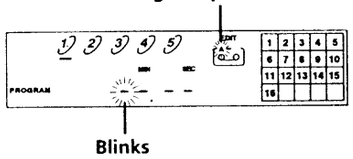
1 Press DISC SKIP to select the disc to be played.



2 Press EDIT.



"EDIT" lights up and "A" blinks.



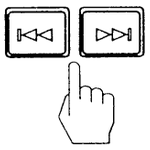
Blinks

(Continued)

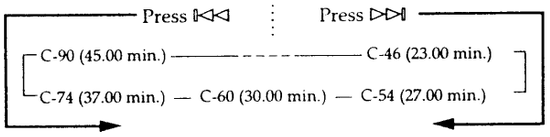
Designating the Total Playing Time – Time Edit

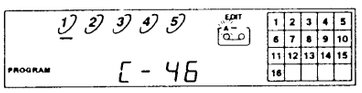
3 **Designate the length of your tape.**
After 2 seconds the time for one side is displayed

• To set the minute

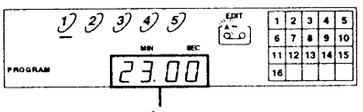


Each time ⏮/⏭ is pressed, the time changes as follows:



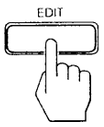


▼ After 2 seconds

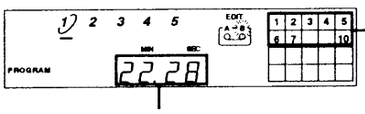


Time

4 **Press EDIT.**



The program for side A is completed.



Chosen tracks

Total playing time

5 **Press EDIT once more, to make a program for the other side of your tape.**

To play the program
Press ▷.
The selections for side A will be played and then the unit will pause. "B" lights up in the tape side indicator. Set the tape to the beginning of side B, then press ▷ or ⏸.
The tracks for side B will be played.

Note
Playback can be performed when "EDIT" is displayed.

To stop playback
Press ■.
You can play the same program repeatedly as long as you do not cancel time edit or erase the program.

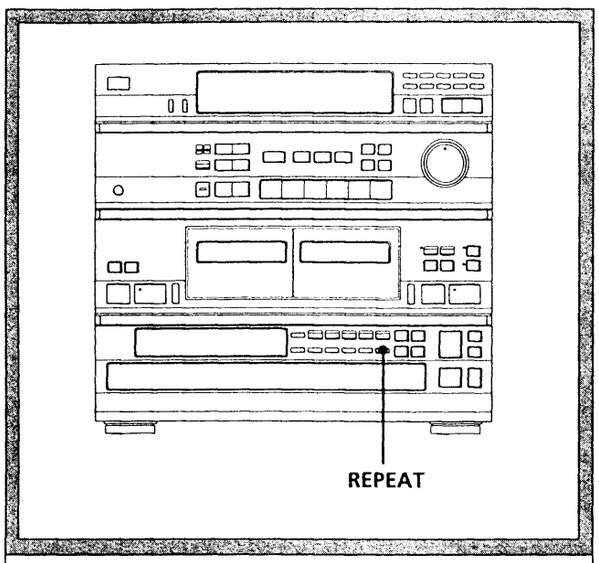
To cancel time edit
Press CONTINUE and return to the continuous playing mode.
The program will be erased.

To erase the entire program
Press ■ once during stop; twice during playback.
The program is also erased when you turn off the unit or open the disc table.

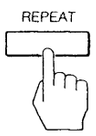
To include desired tracks in the program
1 Make your own program of desired tracks.
(See page 22 for instructions.)
2 Just designate the length of your tape, as shown on the preceding page. The unit will place your selections at the beginning of its program and add other tracks to fill in any remaining time.

Repeat Play

Repeat play allows you to repeat tracks in any play mode. You can repeat all discs, only specified discs, one track, or programmed or reshuffled tracks.



Press REPEAT before or during playback.



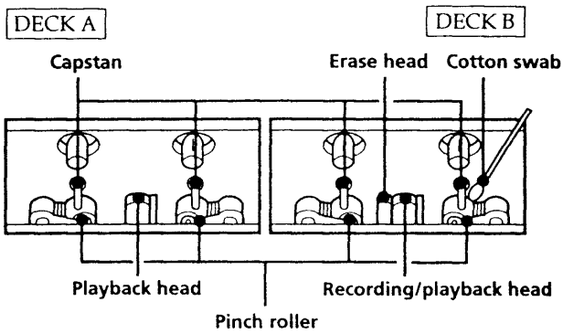
In continuous mode:
To repeat all tracks on a disc (1 DISC mode) or all selections on all discs (ALL DISCS mode), press REPEAT so that "REPEAT" appears on the display.
To repeat one track, press REPEAT so that "REPEAT 1" appears on the display.

In program mode or shuffle mode:
Only the "REPEAT" function is available.
The entire program or all tracks shuffled in random order will be played repeatedly by pressing REPEAT.

To cancel repeat play
Press REPEAT until "REPEAT" or "REPEAT 1" disappears.

Maintenance

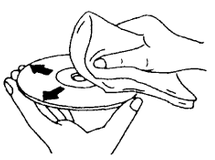
Cleaning the Heads and Tape Path
Clean after every 10 hours of operation and before recording for optimum record/playback quality.
1 Press ⏏.
2 Slightly moisten the tip of a cotton swab with cleaning fluid or alcohol.
3 Wipe heads, pinch rollers and capstans.



Do not insert a cassette until cleaned areas are completely dry.

Demagnetizing the Heads
After 20 to 30 hours of use, it is necessary to remove residual magnetism built up on the head. Turn off the power and demagnetize heads with any commercially available demagnetizer.

Cleaning discs
Before playing, clean the disc with the cleaning cloth. Wipe the disc from the center out.



Do not use solvents such as benzine, thinner, commercially available cleaners or anti-static spray intended for analog discs.

Notes on handling discs
- To keep the disc clean, handle the disc by its edge. Do not touch the surface.
- Do not stick paper or tape on the disc.

- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as temperature may rise considerably.
- After playing, store the disc in its case.

Specifications

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION:
With 8-ohm loads, both channels driven, from 70 -20,000 Hz; rated 100 watts per channel minimum RMS power, with less than 0.9% total harmonic distortion from 250 milliwatts to rated output.

Amplifier

Overall output: 120 W + 120 W (front, at rear/center/woofer off at 1 kHz, 8 ohms)
15 W + 15 W (rear, at center/woofer off at 1 kHz, 8 ohms)
30 W (center, at rear/woofer off at 1 kHz, 6 ohms)
30 W (woofer, at rear/center off at 40 Hz, 4 ohms)

Harmonic distortion: Less than 0.9% (at 1 kHz, 8 ohms loads, front: 120 W + 120 W, rear/center/woofer off)

Frequency response: PHONO: RIAA curve
VIDEO 1/MD, VIDEO 2: 40 Hz – 50 kHz, ±3 dB

Input

	Sensitivity	Impedance
PHONO	2.5 mV	50 kilohms
VIDEO 1/MD VIDEO 2	250 mV	50 kilohms

Output
VIDEO 1/MD: Voltage 250 mV, impedance 1 kilohm
FRONT SPEAKERS: Accept speakers of 8 – 16 ohms
REAR SPEAKERS: Accept speakers of 8 – 16 ohms
CENTER SPEAKERS: Accept speaker of 6 – 16 ohms
SUPER WOOFER SPEAKERS: Accept speaker of 4 – 16 ohms
HEADPHONES: Accept low and high impedance

Tone buttons: BASS: Boost/cut range ±7 dB (100 Hz)
TREBLE: Boost/cut range ±7 dB (10 kHz)

Tuner

System: FM stereo, FM/AM superheterodyne tuner
Quartz-locked PLL digital synthesizer system

FM tuner section

Tuning range: 87.5 – 108 MHz
Antenna terminals: 75 ohms unbalanced
300 ohms balanced
Intermediate frequency: 10.7 MHz
Sensitivity (at 50 dB quieting)
22.1 dBf, 7 µV (mono)
42.1 dBf, 70 µV (stereo)
Usable sensitivity: 19.5 dBf, 5 µV (IHF)

Signal-to-noise ratio (at 75 kHz deviation)
80 dB (mono)
75 dB (stereo)
Separation: 35 dB at 1 kHz
Selectivity: 55 dB at 400 kHz
Harmonic distortion: 0.3% (mono) at 1 kHz
0.5% (stereo) at 1 kHz

AM tuner section

Tuning range: 530 – 1,710 kHz (10 kHz)
531 – 1,710 kHz (9 kHz)
Antenna: AM loop antenna, External antenna terminals
Intermediate frequency: 450 kHz
Usable sensitivity: AM loop antenna: 500 µV/m (1,000 kHz)
Signal-to-noise ratio: 54 dB
Harmonic distortion: 0.5%
Selectivity: 38 dB (10 kHz)

Tape Deck

System: 4-track 2-channel stereo
Frequency response (DOLBY NR OFF)
With TYPE II cassette (Sony UCX-S): 30 – 14,000 Hz (±3 dB)
With TYPE I cassette (Sony HF-S): 30 – 13,000 Hz (±3 dB)
Wow and flutter: 0.12% WRMS (NAB)

Compact Disc

System: Compact disc digital audio system
Laser: Semiconductor laser
Wavelength: 780-790 nm
Frequency response: 2 Hz – 20 kHz (±1.5 dB)
Harmonic distortion: Less than 0.03 % (1 kHz)

General

Power requirement: 120 V AC, 60 Hz
Power consumption: 240 W
Dimensions: Approx. 430 x 410 x 400 mm (w/h/d) (17 x $16^3/_{16}$ x $15^3/_4$ inches) (including projecting parts and controls)
Mass: Approx. 15.2 kg (33 lb 9 oz) net
Accessories supplied
AM loop antenna (1)
FM wire antenna (1)
Remote Commander RM-U451 (1)
Sony batteries SUM-3(NS) (2)

Design and specifications are subject to change without notice.

Troubleshooting

Before going through the check list below, first refer back to the connection and operating procedures.
Should any problem persist after you have made these checks, consult your nearest Sony dealer.

Tuner Operation	
STEREO indicator blinks.	• A very weak FM station or a noisy FM program is received. → Adjust the antenna or connect an external FM antenna.
Severe hum or noise.	• The signal strength is too weak. → Adjust the antenna, connect an external antenna or connect the ground wire.

Cassette Deck Operation	
The ● button does not activate.	• No tape in the cassette compartment. • The tab has been removed from the tape. (See page 16.) → Cover the opening with clear tape.
Function buttons do not activate.	• The cassette compartment is not fully closed.
Recording or playback is not possible, or there is decrease in sound level.	• Recording/playback and erase heads are either dirty or magnetized. → Clean or demagnetize the heads. (See page 25.)
Excessive wow, flutter or dropout.	• The capstan or pinch roller is dirty. (See page 25.)
Incomplete erasure.	• The erase head is dirty. (See page 25.)
Unbalanced tone in high frequencies.	• Improper setting of DOLBY NR. → When playing back, set the switch to the same position used in recording.

Compact Disc Operation	
Remote commander does not operate the unit.	• No disc in the CD section. • The unit is in the pause mode. → Press ▷ or ❚❚ to release pause. • Moisture condensation. → Leave the unit turned on for about an hour. • The disc is set upside down. → Set the disc with the label side up. • The disc is tilted. → Set the disc correctly. • The disc is extremely dirty.
Any operation is not possible.	• The internal control program did not run. → Turn off the power and turn it on again.

Troubleshooting

Super Woofer Operation	
Vibration can be heard from furniture, walls, or glasses in the room.	• These vibration sounds are produced when the super woofer transmits vibration to these objects. → Reduce the volume level or move the vibrating objects away from the super woofer.
SUPER WOOFER can not be turned ON.	• SUPER WOOFER automatically turned OFF when the function is set to PHONO.

General	
The unit will not turn on.	• Check to see if any of the buttons on the front panel were pressed before turning on SYSTEM POWER.
No audio.	• Check the connections. (See pages 5 to 6.) • Adjust volume.
No audio from one channel.	• Check the speaker cord connections. (See pages 5 to 6.)
Noise when TV is turned on.	• Move the TV away from the audio system.
Lack of bass sound or obscure instrument position.	• Check the connection between the super woofer and speakers.
Severe hum or noise	• Keep the audio components further away from the TV. • Keep the connecting cords away from transformer, motors, fluorescent lights, and computers. • Fully insert connecting cord plugs. • Clean any dirty plugs and jacks with a cloth lightly moistened with alcohol.

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